

Appln No. 09/433,730

Amdt date July 16, 2004

Reply to Office action of April 28, 2004

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1-9. (Canceled)

10. (Previously Presented) A digital communication system comprising:

a front end receiving an input spectrum at an intermediate frequency, the input spectrum including an inserted predetermined frequency component, the front end having a signal path comprising in the order recited a first signal mixer, a signal sampler, a second signal mixer, and an equalizer;

first and second tracking loops, the first loop acquiring carrier frequency lock in operative response to the predetermined frequency component of the received spectrum, the second loop providing a signal adapted to position the spectrum at a predetermined location relative to baseband in operative response to said predetermined frequency component;

a third tracking loop coupled to define a symbol timing parameter in operative response to said predetermined frequency component; and

the first signal mixer lying in the first tracking loop, the second signal mixer lying in the second tracking loop, and the signal sampler lying in the third tracking loop.

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11-105. (Canceled)

106. (Previously Presented) The communication system of claim 10, in which the first and second tracking loops each have a controllable oscillator and a single phase detector for adjusting both oscillators responsive to the output of the first mixer.

107. (Previously Presented) The communication system of claim 106, in which the first loop has a wide bandwidth to acquire carrier frequency lock and the second loop has a narrow bandwidth to track carrier frequency after carrier frequency lock.

108. (Previously Presented) The communication system of claim 107, in which oscillator of the first tracking loop is coupled to the second mixer.

109. (Previously Presented) The communication system of claim 108, in which oscillator of the second tracking loop is coupled to the first mixer.

110. (Previously Presented) The communication system of claim 10, in which the first loop has a wide bandwidth to acquire carrier frequency lock and the second loop has a narrow bandwidth to track carrier frequency after carrier frequency lock.

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111. (Currently Amended) A digital communication system comprising:

a front end receiving an input spectrum at an intermediate frequency, the input spectrum including an inserted pilot signal;

a first tracking loop for acquiring carrier frequency lock in operative response to the pilot signal of the received spectrum, the first tracking loop having a wide bandwidth to acquire carrier frequency lock;

a second tracking loop providing a signal adapted to position the spectrum at a predetermined location relative to baseband in operative response to said pilot signal, the second tracking loop having a narrow bandwidth to track carrier frequency after carrier frequency lock; and

a third tracking loop coupled to define a symbol timing parameter in operative response to said pilot signal.

112-119 (Canceled)

120 (New) A digital communication system comprising:

a front end receiving an input spectrum at an intermediate frequency, the input spectrum including an inserted pilot signal;

a first tracking loop for acquiring carrier frequency lock in operative response to the pilot signal of the received spectrum, the first tracking loop having a wide bandwidth correction factor to acquire carrier frequency lock;

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a second tracking loop providing a signal adapted to position the spectrum at a predetermined location relative to baseband in operative response to said pilot signal, the second tracking loop having a narrow bandwidth correction factor to track carrier frequency after carrier frequency lock, the correction factor from the first tracking loop being leaked to the second tracking loop; and

a third tracking loop coupled to define a symbol timing parameter in operative response to said pilot signal.